29 Aug 60

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SAMOS

A NATIONAL SATELLITE RECONNAISSANCE SYSTEM

PHOTOGRAPHIC

ELECTRONIC

REQMTS PROVIDED BY:
UNITED STATES INTELLIGENCE BOARD
-SATELLITE INTELLIGENCE REQMTS COMMITTEE

DEVELOPMENT AGENCY
UNITED STATES AIR FORCE

SECRET

DS 60-2887-A1

#91

INTELLIGENCE REQUIREMENTS FOR SAMOS

[redacted] PRIORITY I

PHOTOGRAPHIC - LOCATION OF OPERATIONAL ICBM SITES

[redacted] PRIORITY II

A. *PHOTOGRAPHIC* - DESCRIPTIVE INFORMATION ON HIGH PRIORITY TARGET LIST ITEMS

B. *ELINT* - ANTI-BALLISTIC MISSILE RADARS, MISSILE TELEMETRY, EARTH TO SATELLITE TRANSMISSIONS

[redacted] PRIORITY III

A *PHOTOGRAPHIC* - TECHNICAL CHARACTERISTICS OF HIGH PRIORITY LIST ITEMS

B *ELINT* - OTHER RADARS SUCH AS EARLY WARNING, AAA, GCI, SHORAN, SAM

[redacted] PRIORITY IV

COMINT - TO THE EXTENT DEVELOPMENT PROVES FEASIBLE

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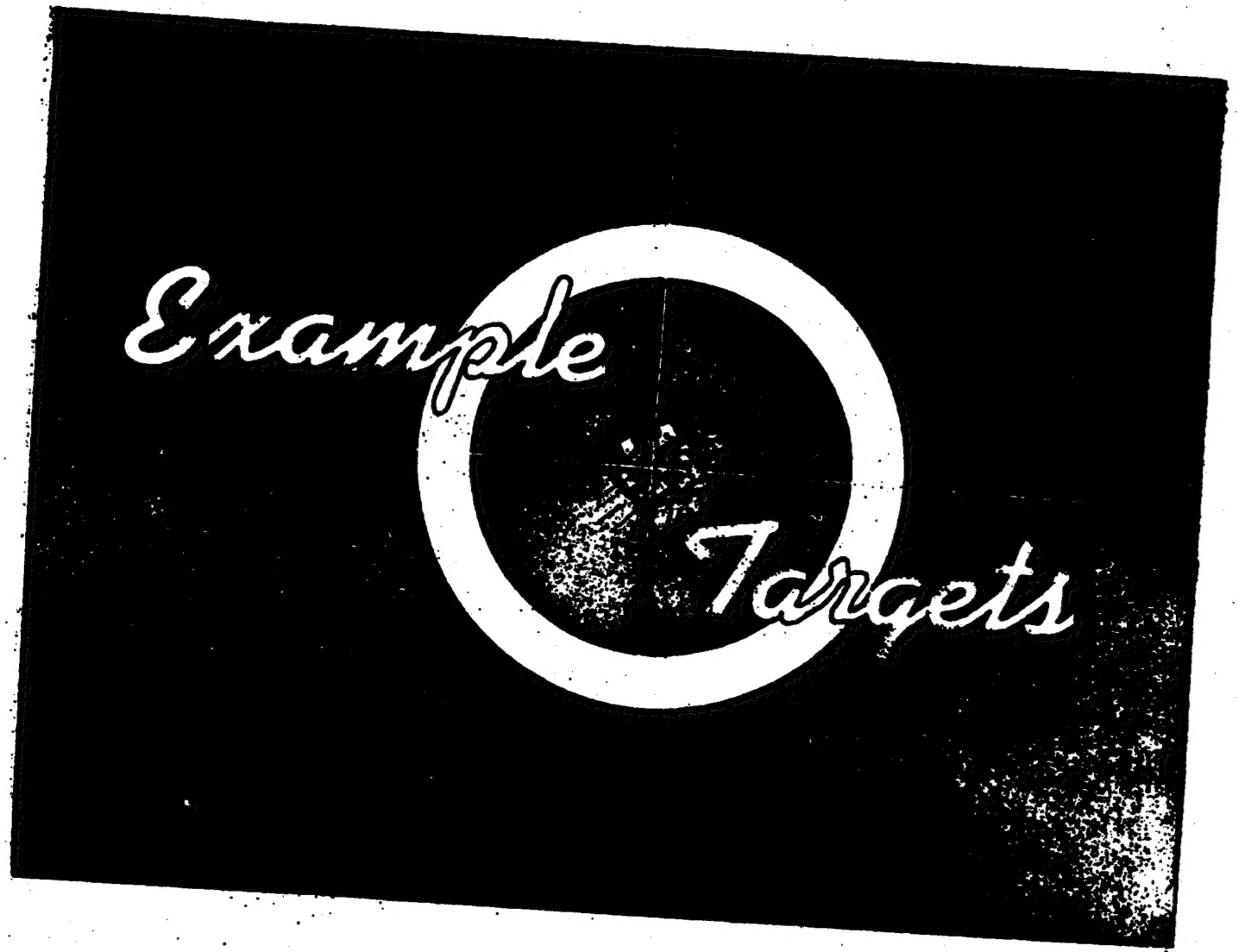
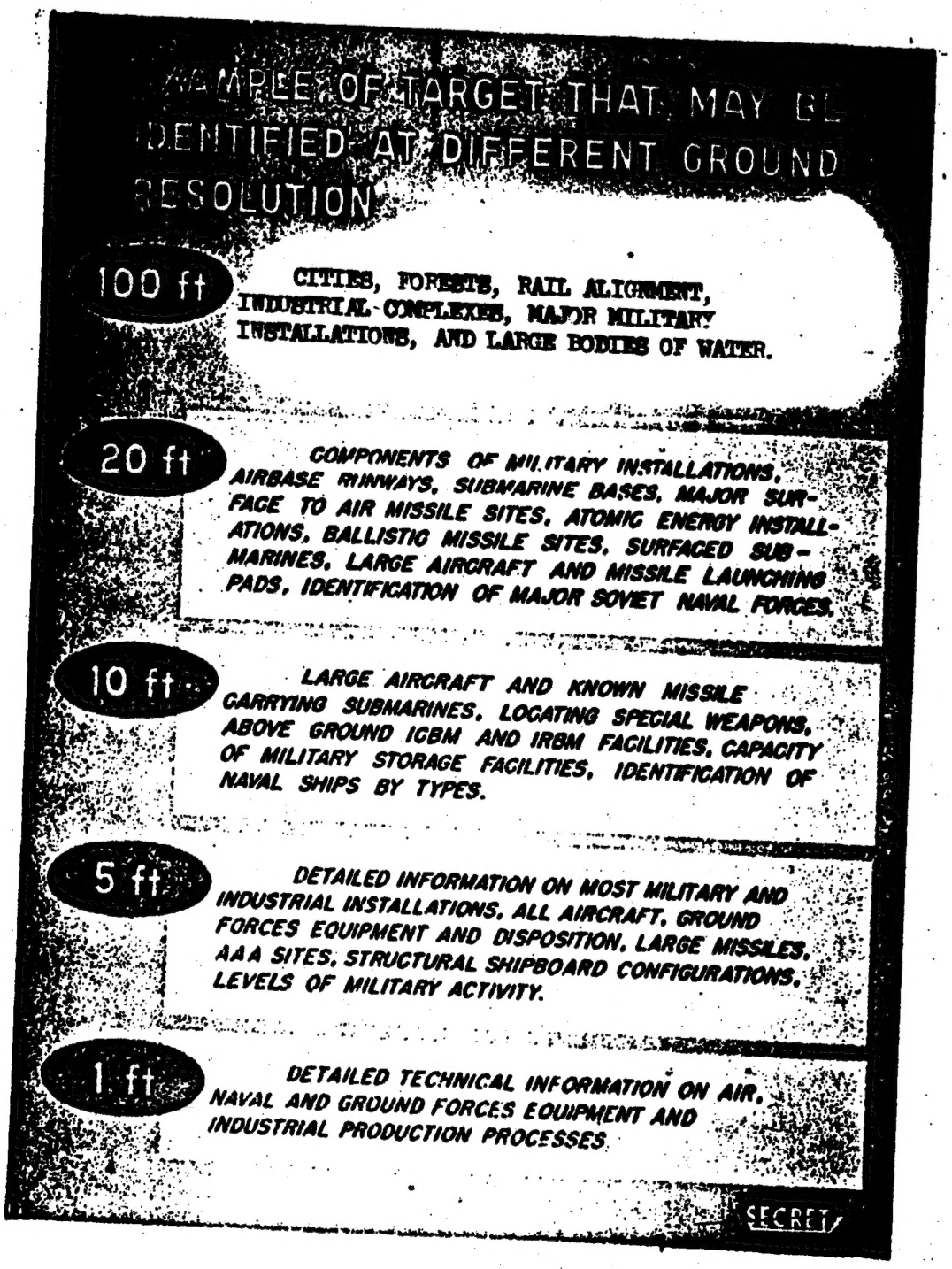

Example
Targets

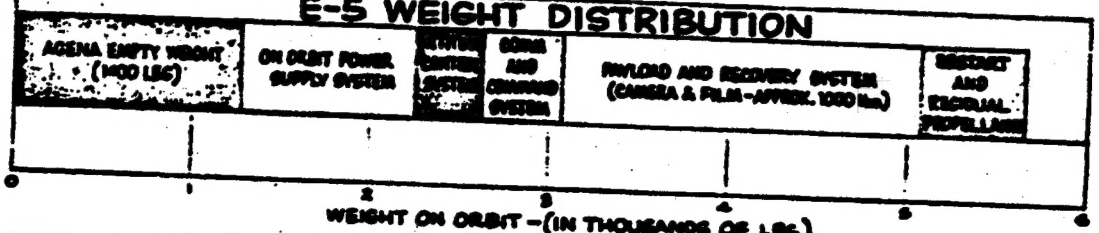

EXAMPLE OF TARGET THAT MAY BE IDENTIFIED AT DIFFERENT GROUND RESOLUTION
100 ft
CITIES, FORESTS, RAIL ALIGNMENT, INDUSTRIAL COMPLEXES, MAJOR MILITARY INSTALLATIONS, AND LARGE BODIES OF WATER.
20 ft
COMPONENTS OF MILITARY INSTALLATIONS, AIRBASE RUNWAYS, SUBMARINE BASES, MAJOR SURFACE TO AIR MISSILE SITES, ATOMIC ENERGY INSTALLATIONS, BALLISTIC MISSILE SITES, SURFACED SUBMARINES, LARGE AIRCRAFT AND MISSILE LAUNCHING PADS, IDENTIFICATION OF MAJOR SOVIET NAVAL FORCES.
10 ft
LARGE AIRCRAFT AND KNOWN MISSILE CARRYING SUBMARINES, LOCATING SPECIAL WEAPONS, ABOVE GROUND ICBM AND IRBM FACILITIES, CAPACITY OF MILITARY STORAGE FACILITIES, IDENTIFICATION OF NAVAL SHIPS BY TYPES.
5 ft
DETAILED INFORMATION ON MOST MILITARY AND INDUSTRIAL INSTALLATIONS, ALL AIRCRAFT, GROUND FORCES EQUIPMENT AND DISPOSITION, LARGE MISSILES, AAA SITES, STRUCTURAL SHIPBOARD CONFIGURATIONS, LEVELS OF MILITARY ACTIVITY.
1 ft
DETAILED TECHNICAL INFORMATION ON AIR, NAVAL AND GROUND FORCES EQUIPMENT AND INDUSTRIAL PRODUCTION PROCESSES
SECRET

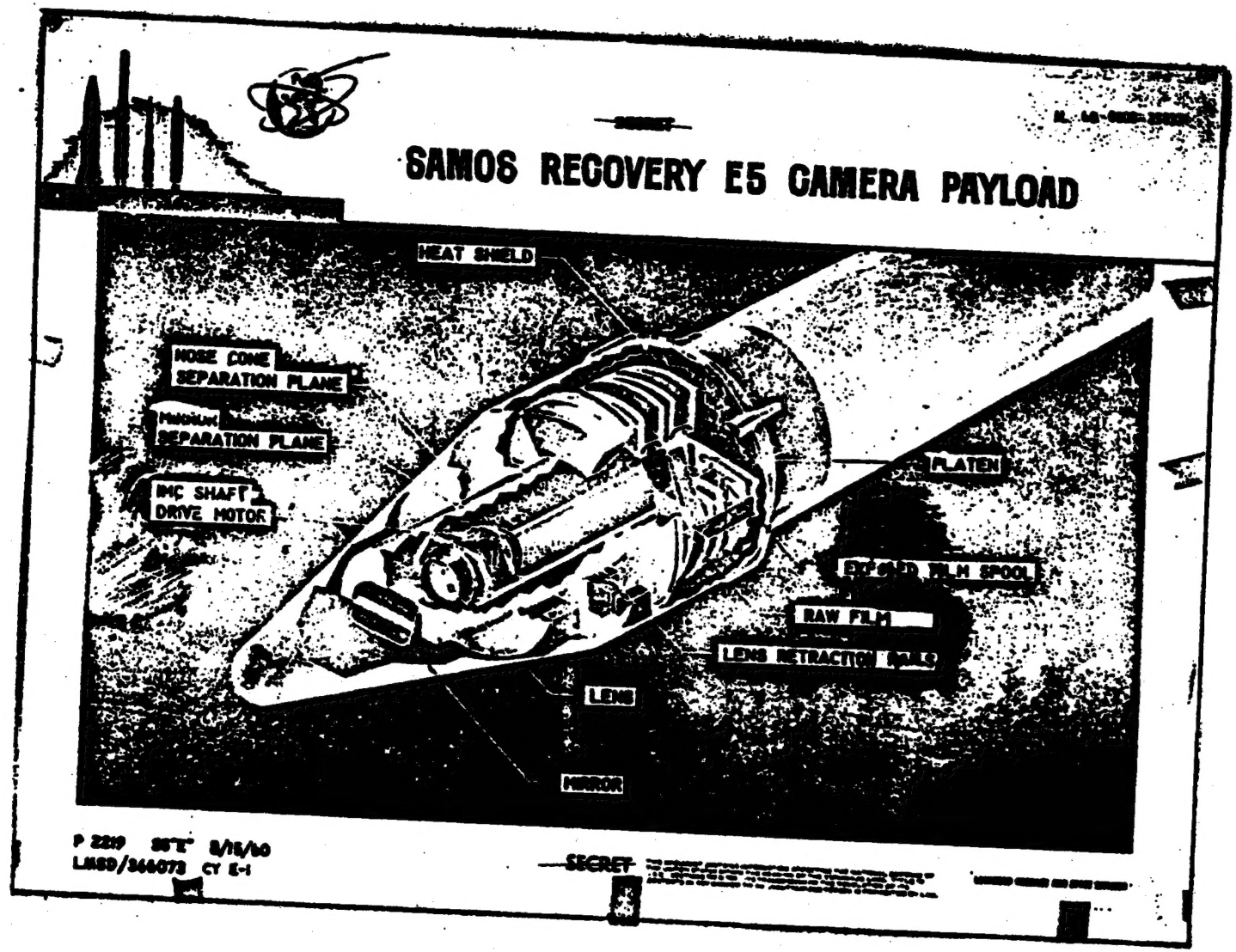
ORBITAL CAPABILITY

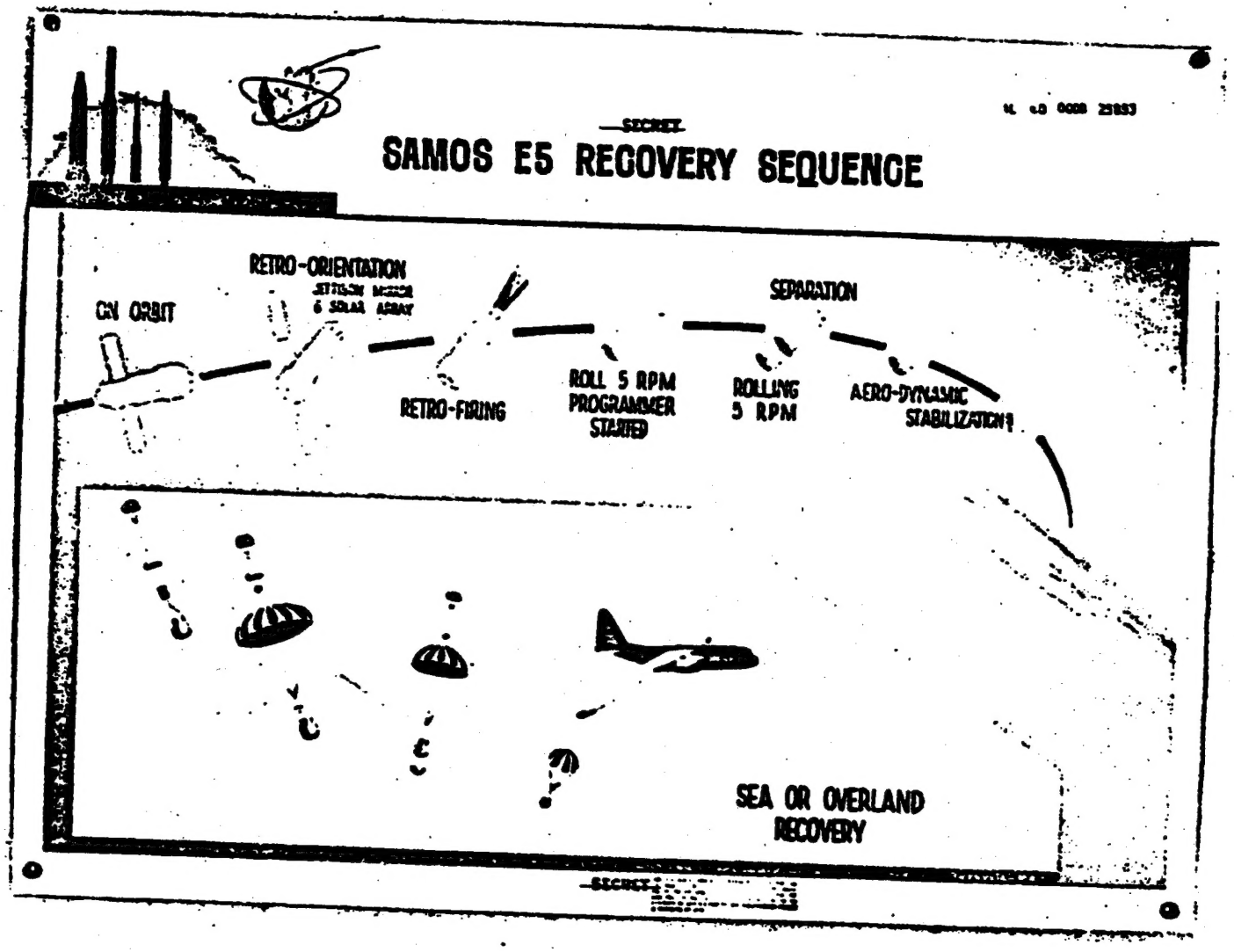
VEHICLE	WEIGHT ON ORBIT	
	AT 150 N. MILES ALTITUDE:	AT 261 N. MILES ALTITUDE:
THOR & AGENA B	2800 LBS	2600 LBS
ATLAS & AGENA B	6500 LBS	6200 LBS

SYSTEM	WEIGHT ON ORBIT	
	AT 150 N. MILES ALTITUDE:	AT 261 N. MILES ALTITUDE:
E-5	5700 LBS	
E-1 / F-1		4300 LBS
F-2		4100 LBS
F-3		4400 LBS
E-2		4900 LBS

E-5 WEIGHT DISTRIBUTION




SECRET
SAMOS RECOVERY E5 CAMERA PAYLOAD
HEAT SHIELD
NOSE CONE SEPARATION PLANE
PLATEN
IMC SHAFT DRIVE MOTOR
RAW FILM
LENS
MIRROR
P 2219 SKE 8/15/60
LMSD/344073 CY E-1
SECRET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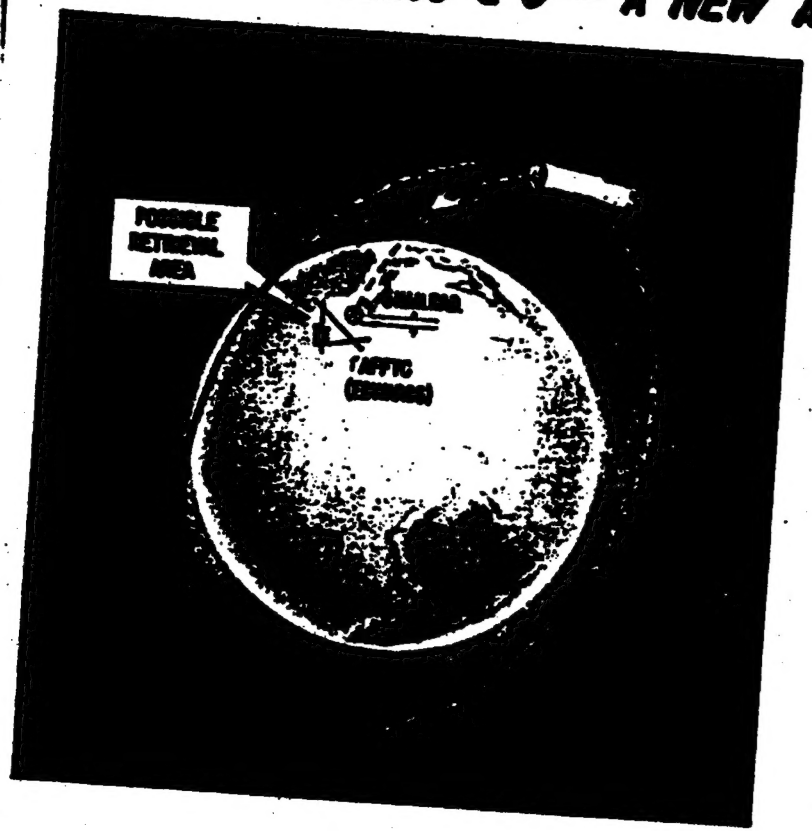
SAMOS E5 RECOVERY SEQUENCE
ON ORBIT
RETRO-ORIENTATION
RETRO-FIRING
ROLL 5 RPM PROGRAMMER STARTED
ROLLING 5 RPM
SEPARATION
AERO-DYNAMIC STABILIZATION?
SEA OR OVERLAND RECOVERY
SECRET

SAMOS E-6 — A NEW APPROACH



- RELIABILITY (SHORT LIFE)
- LARGE AREA COVERAGE
- HIGH RESOLUTION
- EARLY CAPABILITY
- PRECISE OVERLAND RETRIEVAL
- BROADENED CONTRACTOR BASE
- COMPATIBLE WITH DATA PROCESSING EQUIPMENT
- UTILIZE EXISTING GROUND FACILITIES

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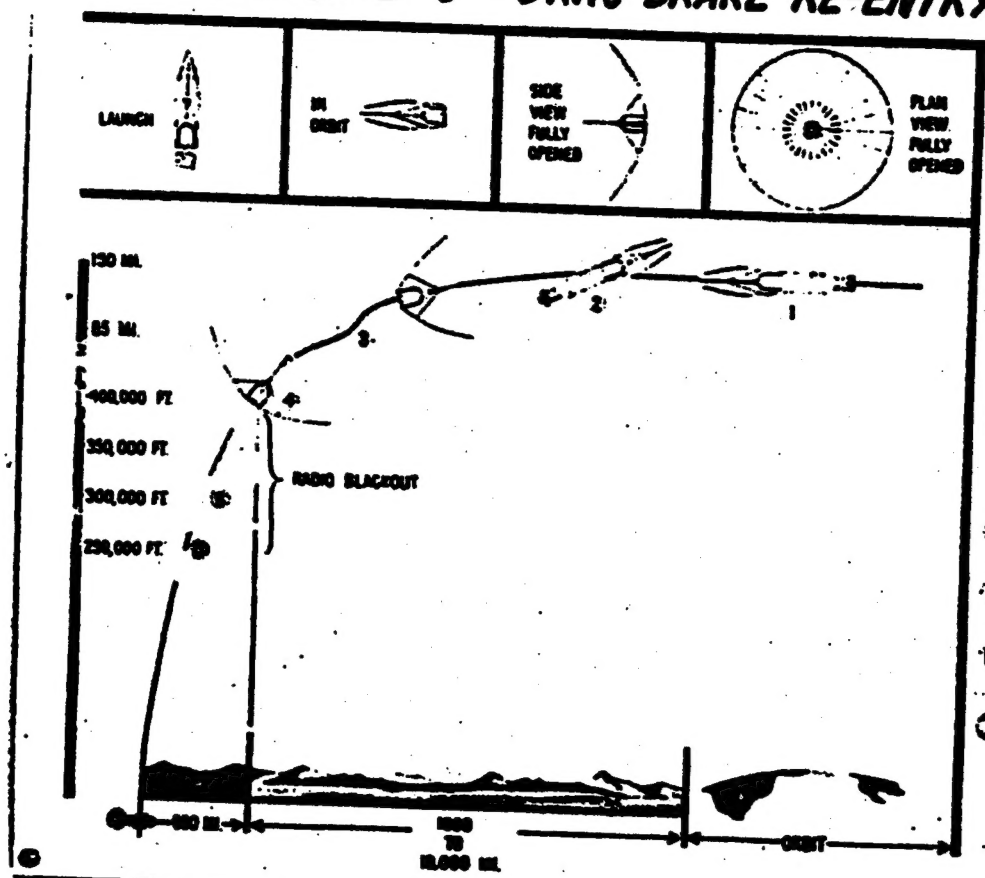
SAMOS E-6 – DRAG BRAKE RE-ENTRY SEQUENCE



1. VEHICLE IN ORBIT
2. REORIENTATION, RETRO FIRING & SEPARATION
3. MODULATE FOR RANGE CORRECTION
4. FULL OPEN
5. PEAK HEATING
6. PEAK DECELERATION
7. LANDING – 40 F.P.S.

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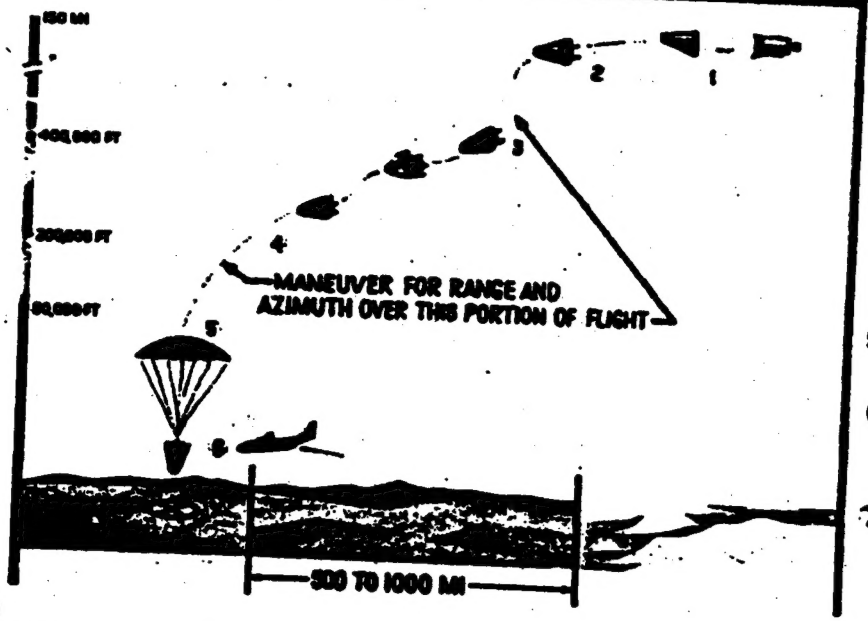
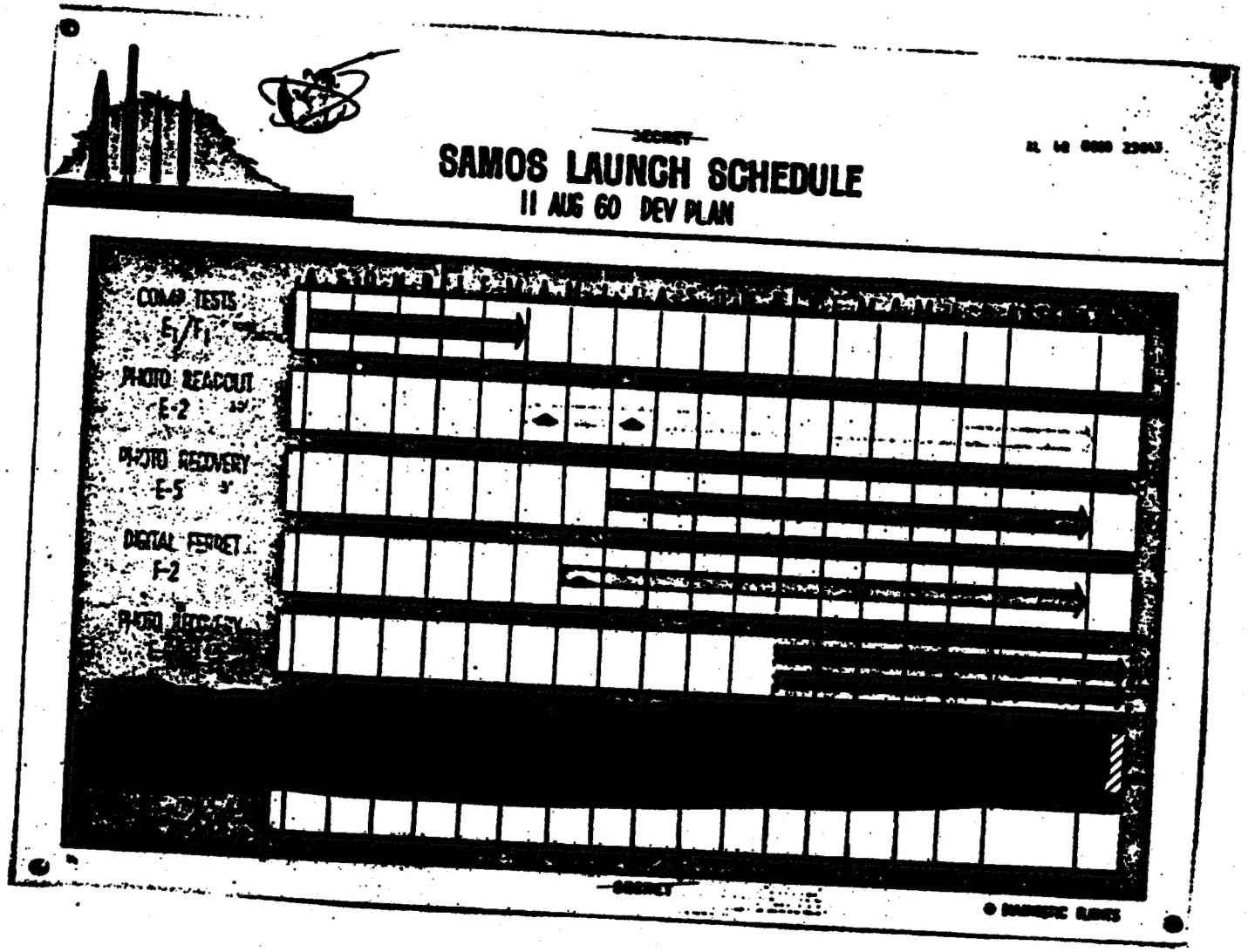
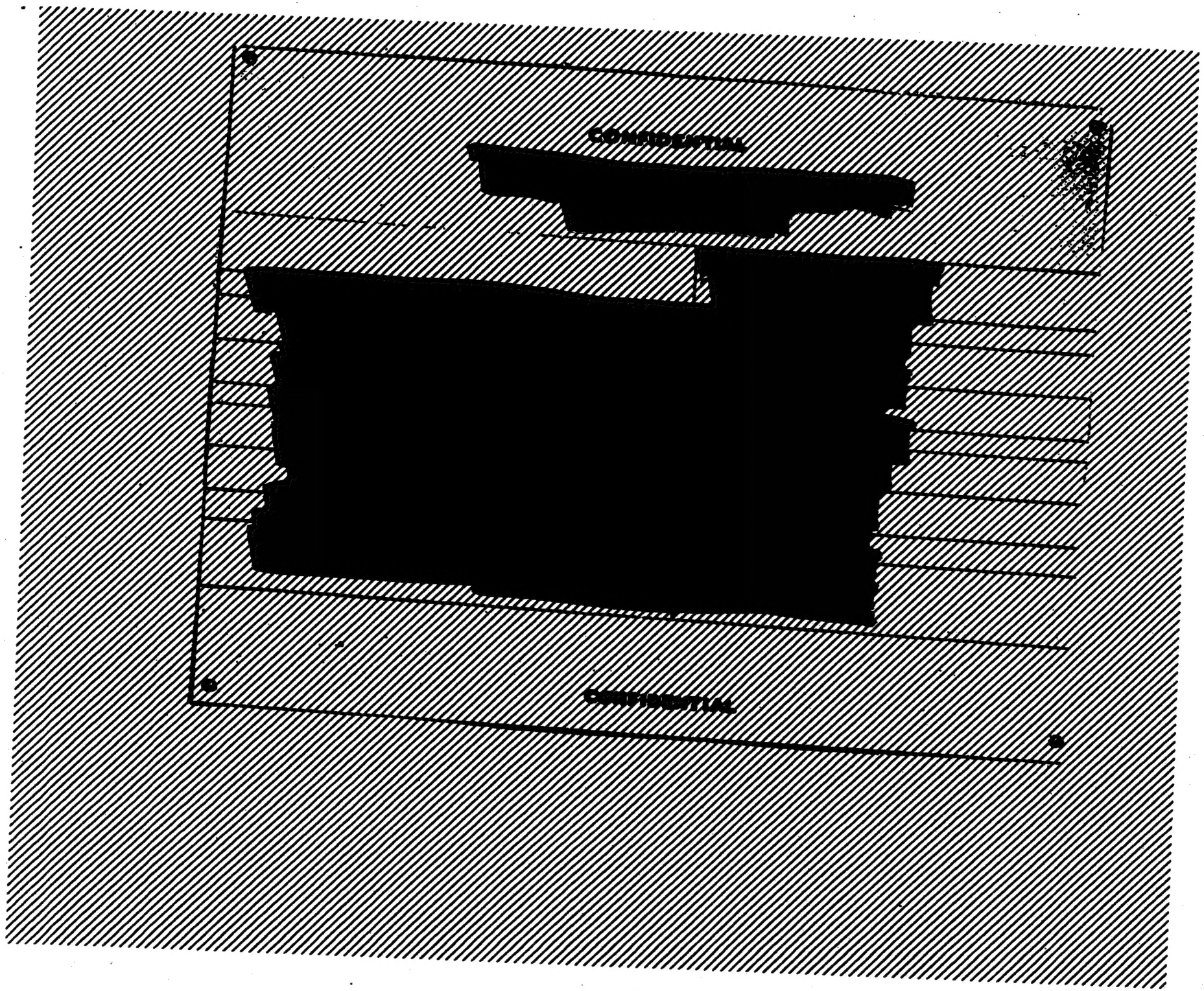
SAMOS E-6 - TYPICAL LIFT RE-ENTRY SEQUENCE



1. VEHICLE IN ORBIT
2. RETRO-ROCKET FIRING AND SEPARATION
3. RE-ENTRY AND RADIO BLACK-OUT-START RANGE AND AZIMUTH CORRECTIONS
4. POST-BLACKOUT-MACH 15 COMMUNICATE FOR TERMINAL GUIDANCE
5. PARACHUTE OPEN-MACH 0.6 TO 1.0
6. AIR PICKUP ATTEMPT POSSIBLE
7. IMPACT - 25 F.P.S.


SECRET
SAMOS LAUNCH SCHEDULE
11 AUG 60 DEV PLAN
COMP TESTS
E-1/F-1
PHOTO READOUT
E-2
PHOTO RECOVERY
E-5
DIGITAL FERRET
F-2
SECRET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SUMMARY

ELEMENTS OF SAMOS RESEARCH AND DEVELOPMENT PROGRAM

- RECOVERY
  - E-5 PHOTO 5' RESOLUTION ——— 7
  - E-6 PHOTO 8' RESOLUTION ——— 7
  - DIAGNOSTIC RECOVERY ——— 4
- READOUT
  - COMPONENT TESTS PHOTO-ELINT E-1/F-1 – 3
  - E-2 PHOTO 20' RESOLUTION ——— 2
  - F-2 ELINT DIGITAL ——— 1

24 PLUS 5 UNASSIGNED ATLAS/AGENA(THRU 1962)

- SPECIAL COMPONENT TESTS
- LAUNCHINGS FROM PT. ARGUELLO
- TRACKING STATIONS
  - VANDENBERG AND NEW BOSTON, INCL. READOUT
  - HAWAII AND ALASKA VHF ONLY
- CONTROL – SATELLITE TEST CENTER – SUNNYVALE
- DATA PROCESSING
  - DEVELOPMENT LABORATORY – DENVER
  - INTERIM PROCESSING OF R&D TAKE – SUNNYVALE
- RECOVERY CENTER – HAWAII

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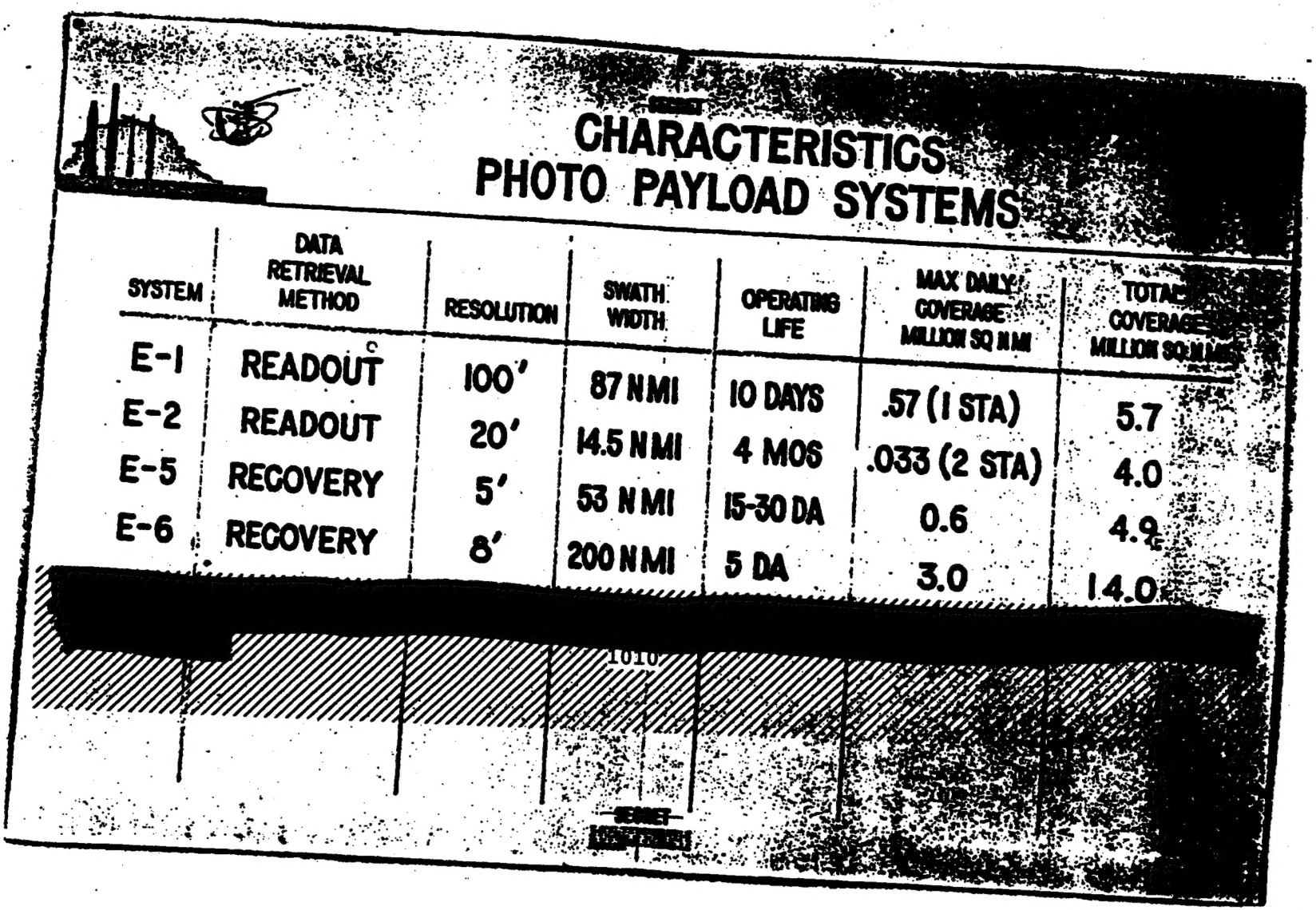
CHARACTERISTICS
PHOTO PAYLOAD SYSTEMS
SYSTEM
DATA RETRIEVAL METHOD
RESOLUTION
SWATH WIDTH
OPERATING LIFE
MAX DAILY COVERAGE MILLION SQ N MI
TOTAL COVERAGE MILLION SQ N MI
E-1
READOUT
100'
87 N MI
10 DAYS
.57 (1 STA)
5.7
E-2
READOUT
20'
14.5 N MI
4 MOS
.033 (2 STA)
4.0
E-5
RECOVERY
5'
53 N MI
15-30 DA
0.6
4.9
E-6
RECOVERY
8'
200 N MI
5 DA
3.0
14.0